



WELL DETAILS: PUCKETT 14B-23

+N/-S	+E/-W	Northing	Ground Level: Easting	8432.00 Latitude	Longitude
0.00	0.00	14357529.00	2433840.00	39.503159	-108.187432



Cathedral Energy Services

Survey Report

Company:	Caerus Oil & Gas	Local Co-ordinate Reference:	Well PUCKETT 14B-23
Project:	Garfield County, CO (UTM 12N)	TVD Reference:	30' KB @ 8462.00usft
Site:	S23-T6S-R97W (MESA N23)	MD Reference:	30' KB @ 8462.00usft
Well:	PUCKETT 14B-23	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Project	Garfield County, CO (UTM 12N)		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 - Western US		
Map Zone:	Zone 12N (114 W to 108 W)		

Site		S23-T6S-R97W (MESA N23)			
Site Position:		Northing:	14,357,518.00 usft	Latitude:	39.503127
From:	Map	Easting:	2,433,869.00 usft	Longitude:	-108.187330
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	1.79 °

Well	PUCKETT 14B-23					
Well Position	+N/-S	0.00 usft	Northing:	14,357,529.00 usft	Latitude:	39.503159
	+E/-W	0.00 usft	Easting:	2,433,840.00 usft	Longitude:	-108.187432
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	8,432.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	10/7/2017	9.70	65.80	51,681.30000000

Design	FINAL				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	296.84	

Survey Program	Date	10/14/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
174.00	295.00	Survey #1 (OH)	INC-ONLY_A027Ua	OWSG Inclination Only Surveys	
387.00	479.00	Survey #2 (OH)	INC+TREND	Inclinometer + known azi trend	
571.00	9,338.00	Survey #3 (OH)	MWD+HDGM	OWSG MWD + HDGM	

Survey										
Measured			Vertical			Vertical	Dogleg	Build	Formations /	
Depth	Inclination	Azimuth	Depth	+N/-S	+E/-W	Section	Rate	Rate	Comments	
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(°/100usf	(°/100u		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
174.00	0.09	59.08	174.00	0.07	0.12	-0.07	0.05	0.05		
204.00	0.04	115.59	204.00	0.08	0.15	-0.10	0.25	-0.17		
295.00	1.71	294.89	294.99	0.64	-1.06	1.23	1.92	1.84		
387.00	3.78	287.33	386.88	2.12	-5.20	5.59	2.28	2.25		
479.00	6.64	297.35	478.49	5.46	-12.82	13.90	3.25	3.11		
571.00	9.05	290.40	569.62	10.43	-24.33	26.42	2.81	2.62		
665.00	11.43	290.58	662.12	16.28	-39.98	43.02	2.53	2.53		
759.00	13.58	289.96	753.88	23.33	-59.07	63.24	2.29	2.29		
854.00	15.16	292.34	845.91	31.85	-81.05	86.70	1.78	1.66		
948.00	16.57	297.43	936.33	42.70	-104.31	112.36	2.11	1.50		

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Well:	PUCKETT 14B-23	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100u)	Formations / Comments
1,043.00	18.33	301.13	1,026.96	56.67	-129.13	140.80	2.19	1.85	
1,137.00	20.83	302.80	1,115.52	73.36	-155.83	172.17	2.73	2.66	
1,231.00	21.75	299.46	1,203.10	90.98	-185.05	206.19	1.62	0.98	
1,326.00	22.02	298.93	1,291.26	108.26	-215.96	241.57	0.35	0.28	
1,420.00	21.27	297.79	1,378.63	124.73	-246.47	276.23	0.91	-0.80	
1,515.00	21.80	298.31	1,467.00	141.13	-277.24	311.09	0.59	0.56	
1,609.00	23.86	299.28	1,553.63	158.71	-309.19	347.54	2.23	2.19	
1,704.00	23.69	299.02	1,640.57	177.36	-342.64	385.81	0.21	-0.18	
1,798.00	23.20	296.38	1,726.81	194.75	-375.74	423.20	1.23	-0.52	
1,893.00	21.89	295.15	1,814.55	210.59	-408.54	459.61	1.47	-1.38	
1,987.00	21.58	298.31	1,901.87	226.24	-439.62	494.41	1.29	-0.33	
2,082.00	20.74	300.77	1,990.46	243.13	-469.46	528.66	1.29	-0.88	
2,176.00	19.38	299.10	2,078.76	259.23	-497.39	560.85	1.57	-1.45	
2,271.00	20.44	298.49	2,168.08	274.81	-525.74	593.18	1.14	1.12	
2,365.00	20.04	299.81	2,256.28	290.65	-554.14	625.67	0.65	-0.43	
2,460.00	19.86	300.77	2,345.57	306.99	-582.13	658.02	0.39	-0.19	
2,593.00	19.16	300.60	2,470.94	329.66	-620.33	702.34	0.53	-0.53	
2,688.00	19.78	299.02	2,560.51	345.40	-647.80	733.96	0.86	0.65	
2,783.00	20.35	297.43	2,649.74	360.80	-676.52	766.54	0.83	0.60	
2,877.00	20.70	297.52	2,737.77	376.01	-705.76	799.50	0.37	0.37	
2,971.00	21.67	299.54	2,825.42	392.24	-735.59	833.45	1.29	1.03	
3,066.00	21.14	300.60	2,913.87	409.61	-765.60	868.06	0.69	-0.56	
3,160.00	21.31	300.77	3,001.49	426.98	-794.87	902.02	0.19	0.18	
3,255.00	20.08	293.39	3,090.37	442.29	-824.67	935.52	3.03	-1.29	
3,349.00	21.27	293.04	3,178.32	455.36	-855.17	968.64	1.27	1.27	
3,444.00	21.40	292.69	3,266.81	468.79	-887.02	1,003.12	0.19	0.14	
3,538.00	21.84	292.51	3,354.19	482.10	-919.00	1,037.66	0.47	0.47	
3,632.00	22.28	294.80	3,441.31	496.27	-951.32	1,072.91	1.03	0.47	
3,727.00	22.32	296.38	3,529.21	511.84	-983.83	1,108.94	0.63	0.04	
3,821.00	22.85	297.08	3,616.00	528.08	-1,016.08	1,145.04	0.63	0.56	
3,916.00	22.68	298.49	3,703.60	545.21	-1,048.60	1,181.80	0.60	-0.18	
4,010.00	23.03	299.28	3,790.22	562.85	-1,080.56	1,218.28	0.50	0.37	
4,105.00	23.03	299.19	3,877.65	581.00	-1,112.99	1,255.42	0.04	0.00	
4,199.00	22.32	297.87	3,964.38	598.32	-1,144.82	1,291.63	0.93	-0.76	
4,293.00	23.16	297.70	4,051.08	615.25	-1,176.97	1,327.96	0.90	0.89	
4,388.00	23.03	297.87	4,138.46	632.62	-1,209.94	1,365.22	0.15	-0.14	
4,482.00	23.51	297.08	4,224.82	649.75	-1,242.89	1,402.36	0.61	0.51	
4,577.00	23.07	298.31	4,312.08	667.21	-1,276.15	1,439.91	0.69	-0.46	
4,671.00	22.50	297.08	4,398.74	684.13	-1,308.37	1,476.31	0.79	-0.61	
4,766.00	22.06	297.87	4,486.65	700.74	-1,340.33	1,512.32	0.56	-0.46	
4,860.00	22.10	299.28	4,573.76	717.64	-1,371.36	1,547.64	0.57	0.04	
4,955.00	22.54	299.02	4,661.64	735.22	-1,402.87	1,583.69	0.47	0.46	
5,050.00	21.45	298.84	4,749.72	752.43	-1,434.01	1,619.25	1.15	-1.15	
5,144.00	20.26	296.64	4,837.56	768.02	-1,463.61	1,652.70	1.52	-1.27	
5,239.00	19.91	295.59	4,926.79	782.38	-1,492.90	1,685.32	0.53	-0.37	
5,333.00	20.13	294.89	5,015.11	796.10	-1,522.01	1,717.49	0.35	0.23	
5,428.00	20.87	297.17	5,104.09	810.71	-1,551.90	1,750.75	1.15	0.78	
5,522.00	22.15	298.40	5,191.54	826.78	-1,582.38	1,785.21	1.44	1.36	
5,617.00	23.20	299.28	5,279.20	844.45	-1,614.46	1,821.81	1.16	1.11	
5,711.00	24.79	299.19	5,365.07	863.12	-1,647.81	1,860.00	1.69	1.69	
5,806.00	23.42	299.54	5,451.79	882.14	-1,681.63	1,898.76	1.45	-1.44	
5,900.00	22.24	299.98	5,538.42	900.24	-1,713.29	1,935.18	1.27	-1.26	
5,995.00	20.87	300.60	5,626.77	917.84	-1,743.43	1,970.02	1.46	-1.44	

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Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100u)	Formations / Comments
6,089.00	18.94	300.07	5,715.15	934.01	-1,771.05	2,001.96	2.06	-2.05	
6,184.00	18.19	298.31	5,805.21	948.77	-1,797.44	2,032.18	0.99	-0.79	
6,278.00	18.11	295.50	5,894.54	962.02	-1,823.55	2,061.45	0.93	-0.09	
6,373.00	16.22	293.22	5,985.30	973.61	-1,849.07	2,089.46	2.11	-1.99	
6,467.00	15.73	293.74	6,075.67	983.91	-1,872.80	2,115.28	0.54	-0.52	
6,561.00	15.21	291.55	6,166.27	993.57	-1,895.93	2,140.28	0.83	-0.55	
6,656.00	13.45	290.14	6,258.31	1,001.95	-1,917.90	2,163.67	1.89	-1.85	
6,750.00	10.85	290.05	6,350.19	1,008.75	-1,936.48	2,183.31	2.77	-2.77	
6,845.00	9.45	289.61	6,443.70	1,014.43	-1,952.22	2,199.93	1.48	-1.47	
6,939.00	8.35	290.58	6,536.57	1,019.42	-1,965.88	2,214.37	1.18	-1.17	
7,034.00	6.99	291.72	6,630.72	1,023.99	-1,977.71	2,226.99	1.44	-1.43	
7,128.00	5.85	289.61	6,724.13	1,027.71	-1,987.54	2,237.43	1.24	-1.21	LAST SURVEY - 7128' MD
9,338.00	11.34	250.00	8,910.16	991.14	-2,298.28	2,498.18	0.35	0.25	PTB - 9338' MD

Targets

Target Name

- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- Shape									
PUCKETT 14B-23 PBHL	0.00	0.00	8,911.00	963.82	-2,219.98	14,358,423.00	2,431,591.00	39.505804	-108.195296
- actual wellpath misses target center by 82.12usft at 9328.26usft MD (8900.61 TVD, 991.80 N, -2296.48 E)									
- Ellipse (radii L200.00 W100.00 on 250.00 azi)									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
7,128.00	6,724.13	1,027.71	-1,987.54	LAST SURVEY - 7128' MD
9,338.00	8,910.16	991.14	-2,298.28	PTB - 9338' MD

Checked By: _____ Approved By: _____ Date: _____